

**SONY®**

DATA PROJECTOR

**VPL-ES4**  
**VPL-EX4**

REMOTE COMMANDER  
**RM-PJ4**

SERVICE MANUAL  
1st Edition

## **⚠ 警告**

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

## **⚠ WARNING**

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## **⚠ WARNUNG**

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## **⚠ AVERTISSEMENT**

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

## **警告**

電池は、間違ったタイプと交換した場合、破裂の危険がある。

使用済み電池は、地域のルールに従って処分すること。

## **CAUTION**

RISK OF EXPLOSION IF BATTERY IS REPLACED BY INCORRECT TYPE.  
DISPOSE OF USED BATTERIES ACCORDING TO THE RULE IN REGION.

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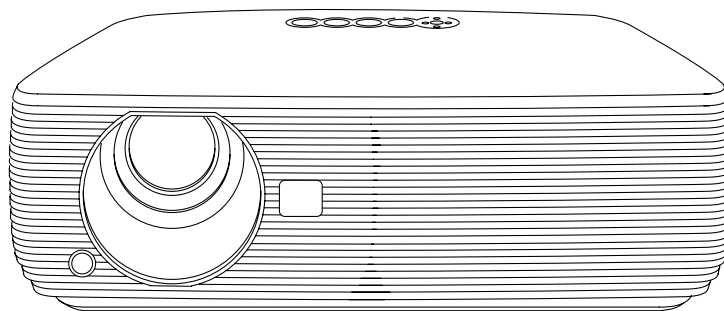
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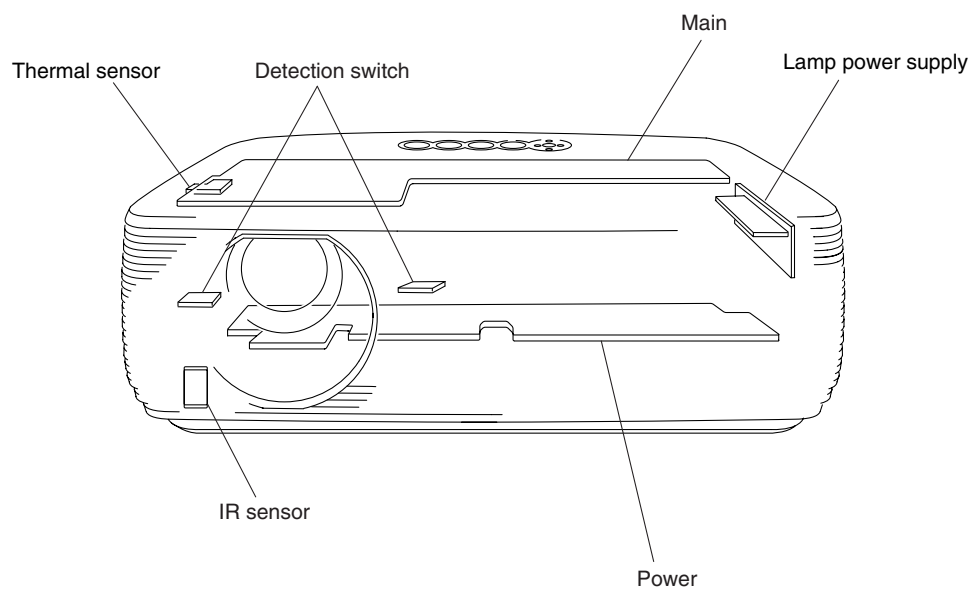
## Section 1

### Service Information

#### 1-1. Appearance Figure

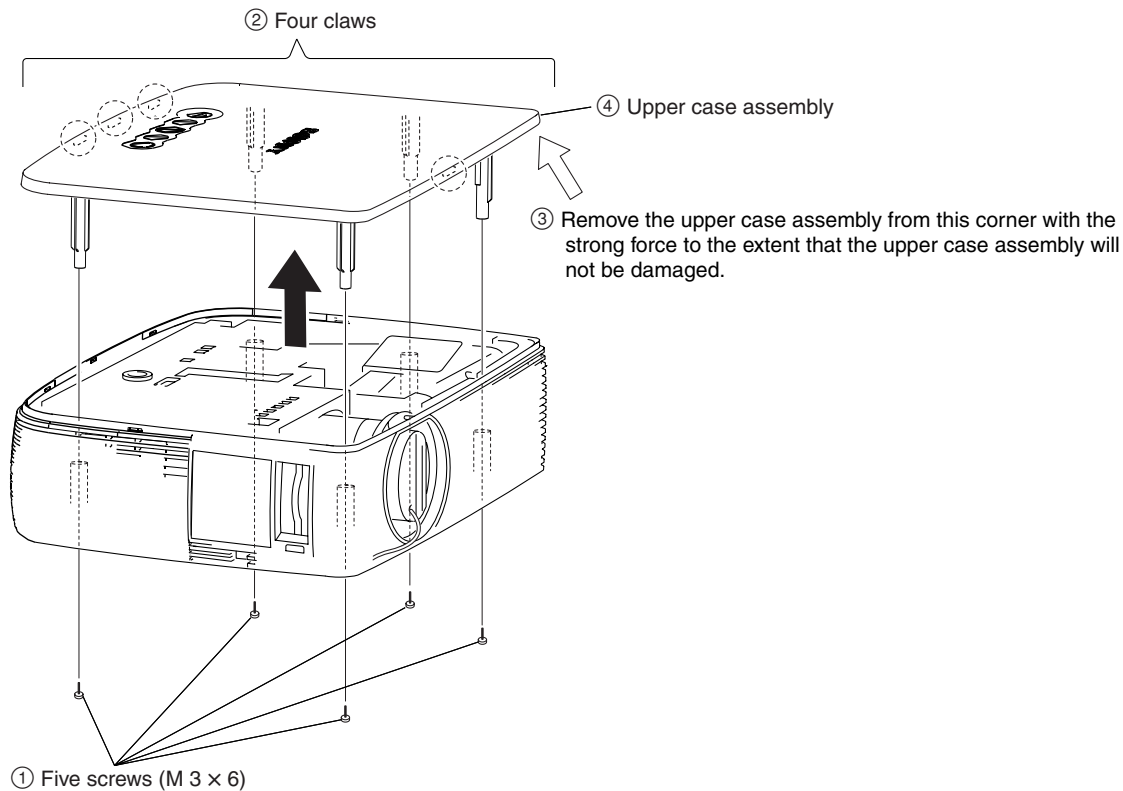


#### 1-2. Board Locations



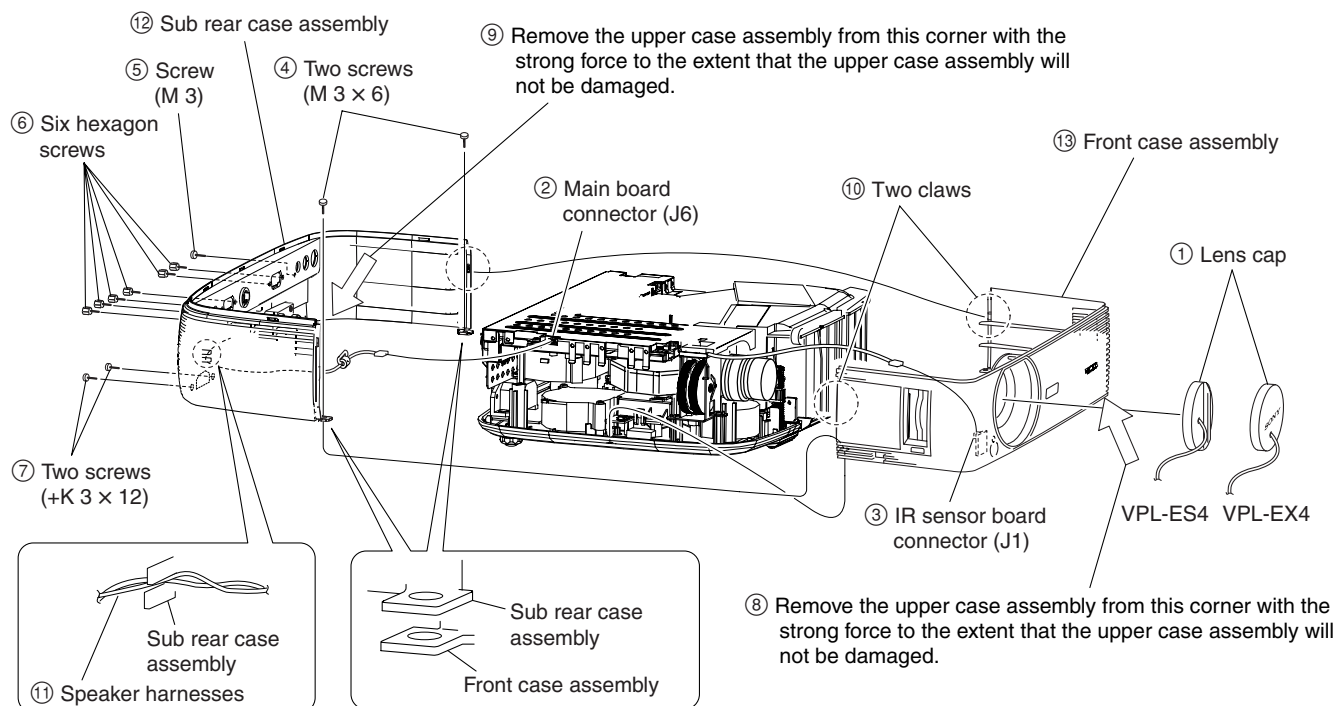
## 1-3. Disassembly

### 1-3-1. Upper Case Assembly



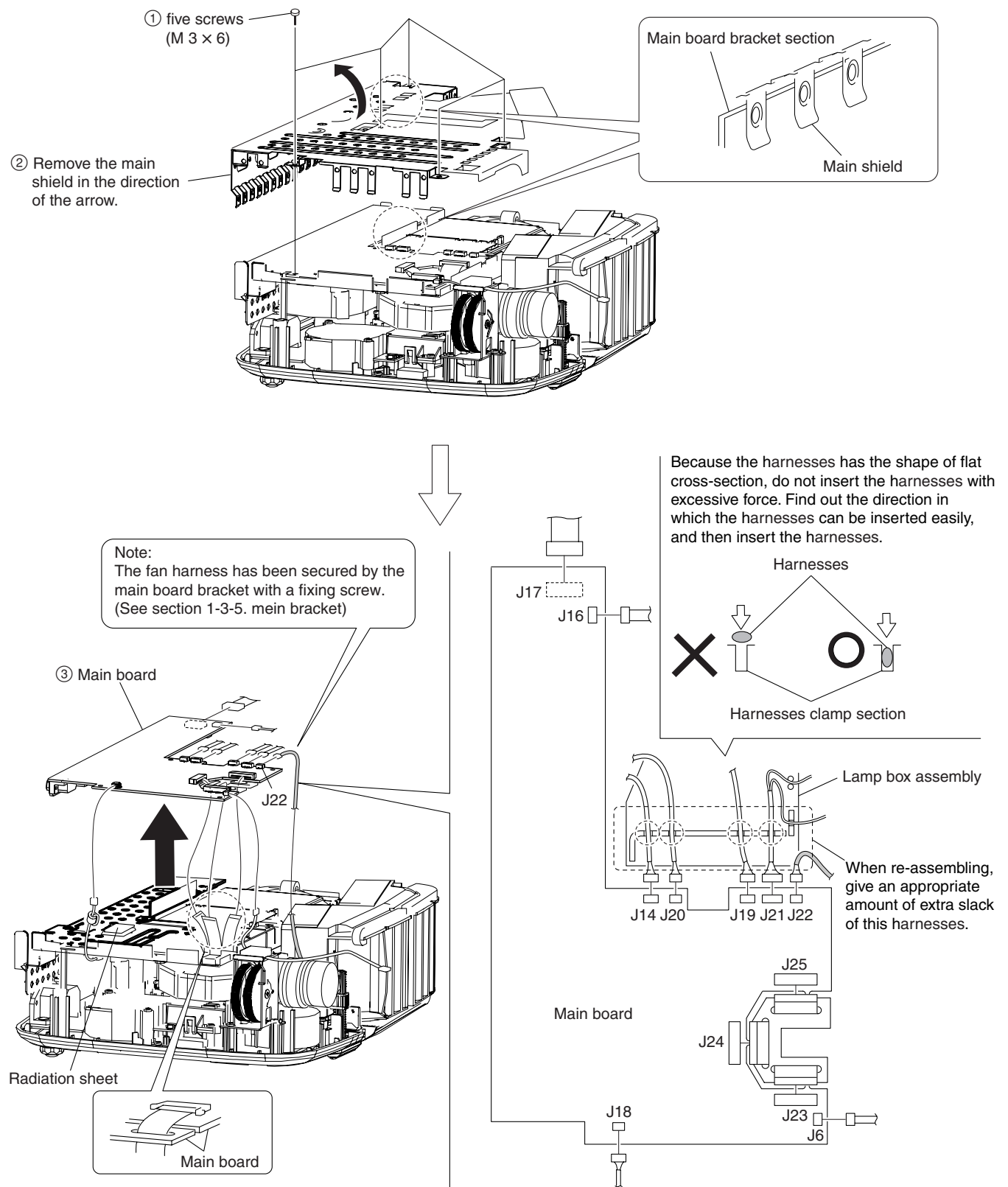
### 1-3-2. Front Case Assembly and Sub Rear Case Assembly

Remove the upper case assembly before starting the removal work.



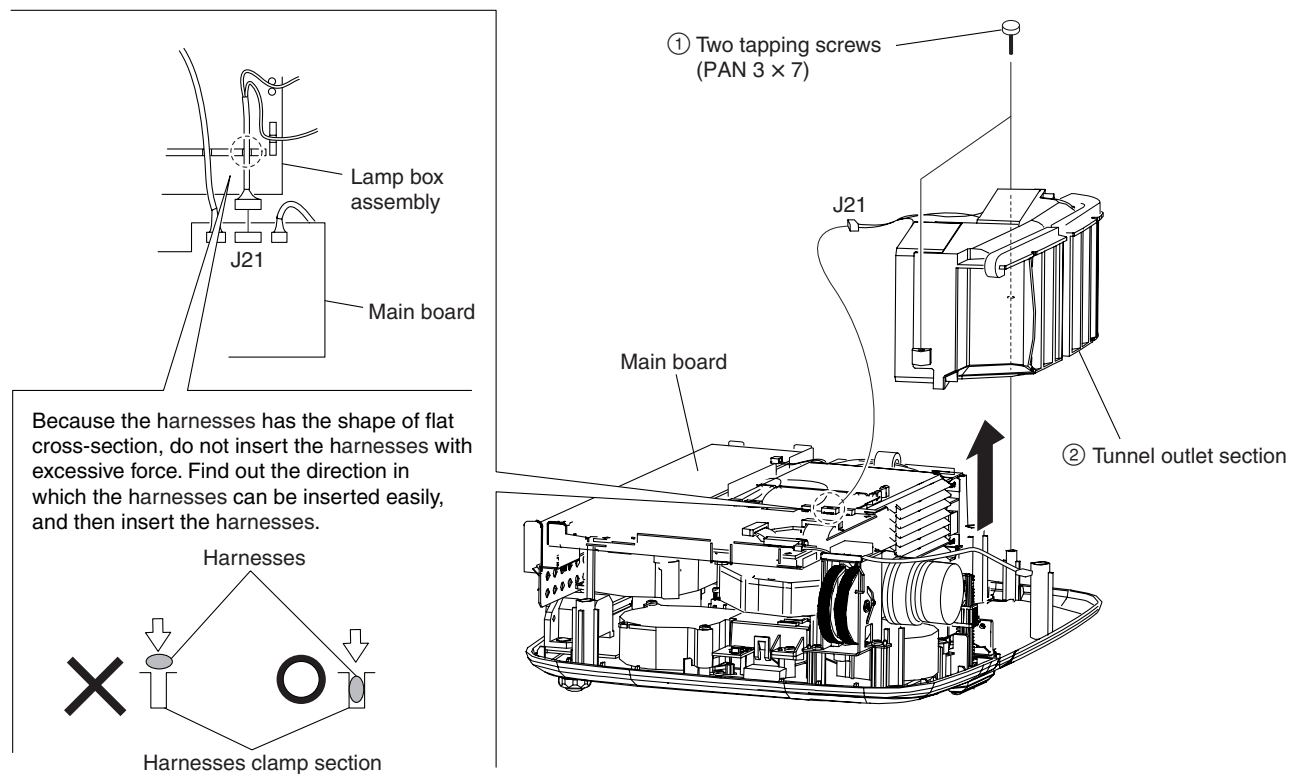
### 1-3-3. Main Board

Remove the front case assembly and sub rear case assembly before starting the removal work.



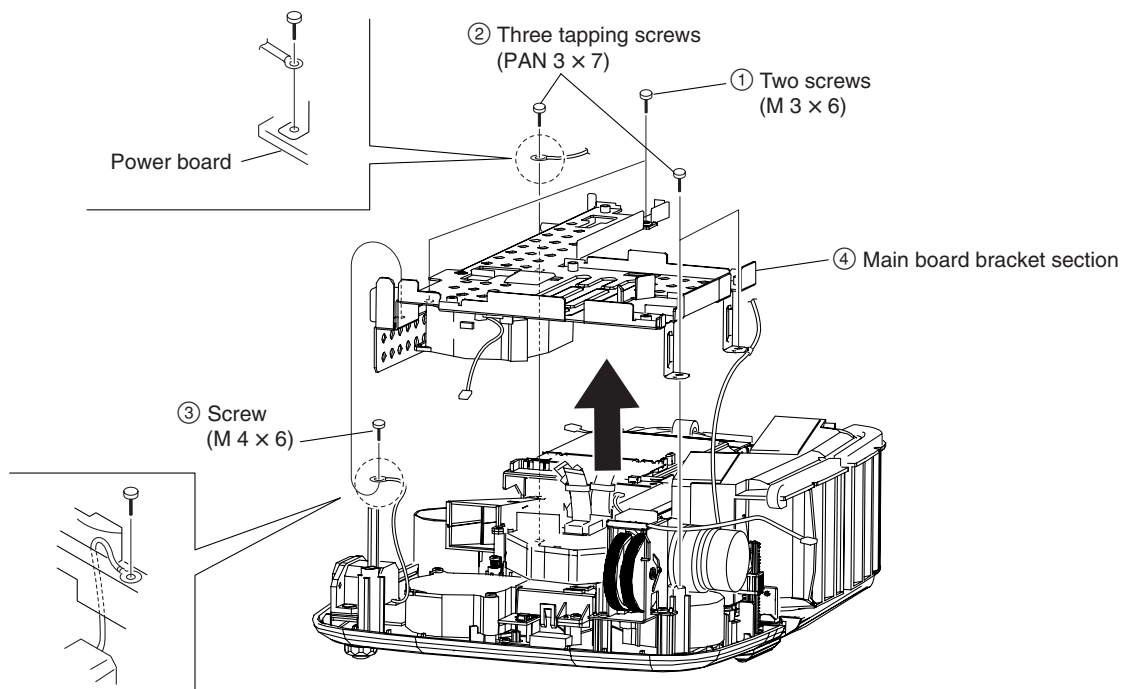
### 1-3-4. Tunnel Outlet Section

Remove the front case assembly and sub rear case assembly before starting the removal work.



### 1-3-5. Main Board Bracket Section

Remove the main board before starting the removal work.





Remove the main board bracket section before starting the removal work.



① Two stand assemblies

CN701

CN603

Power board

CN603

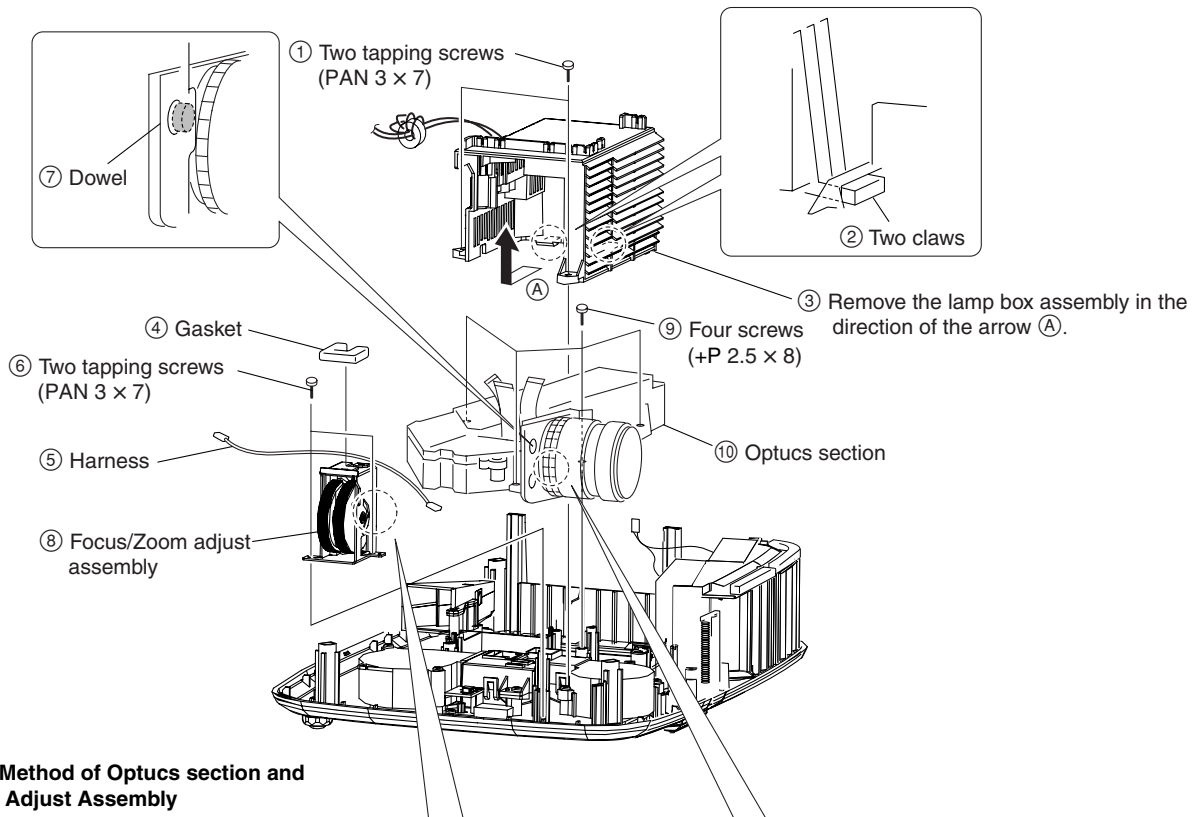
CN701

Lamp power supply (P1)

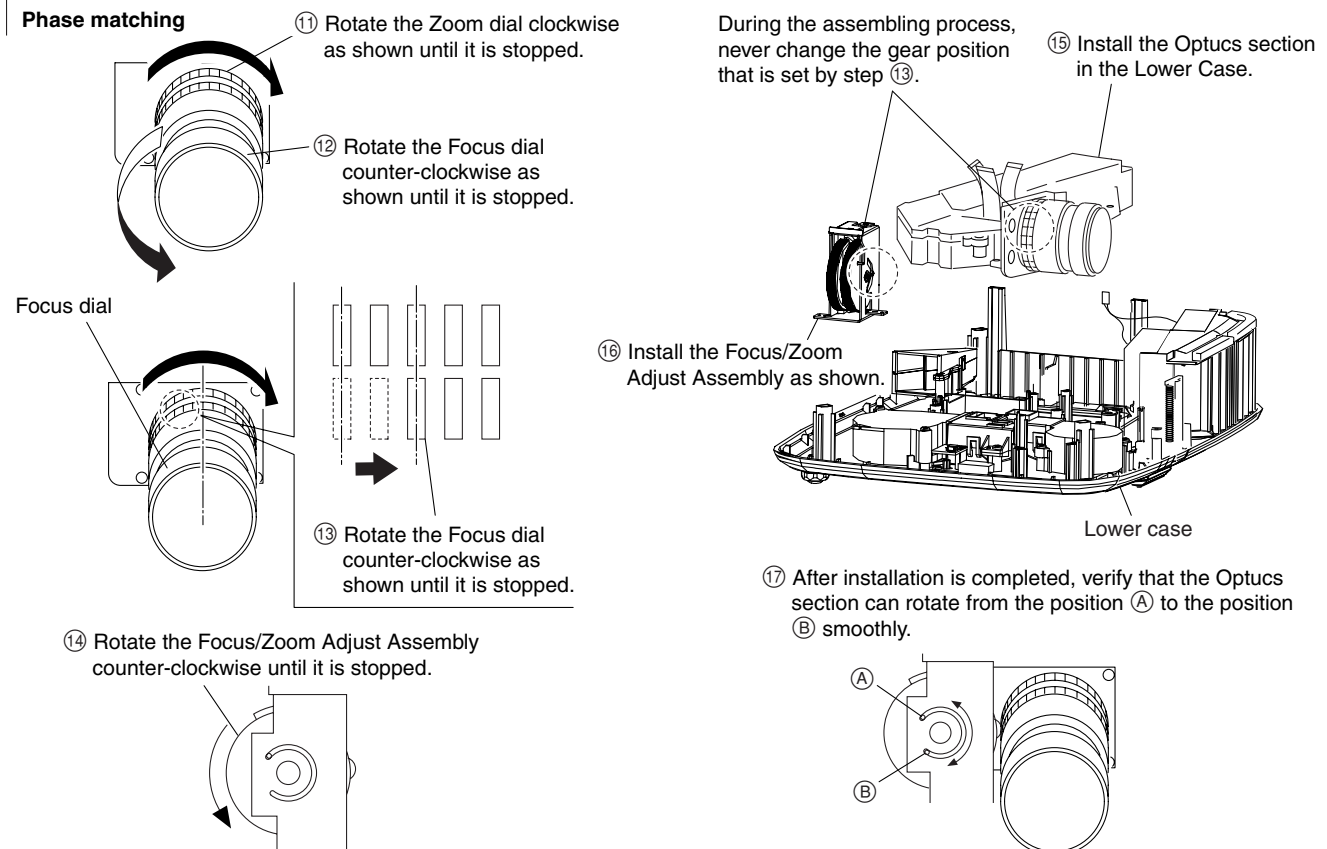
② Remove the power board in the direction of the arrow.

## 1-3-8. Optics Section

Remove the lamp power supply and power board before starting the removal work.

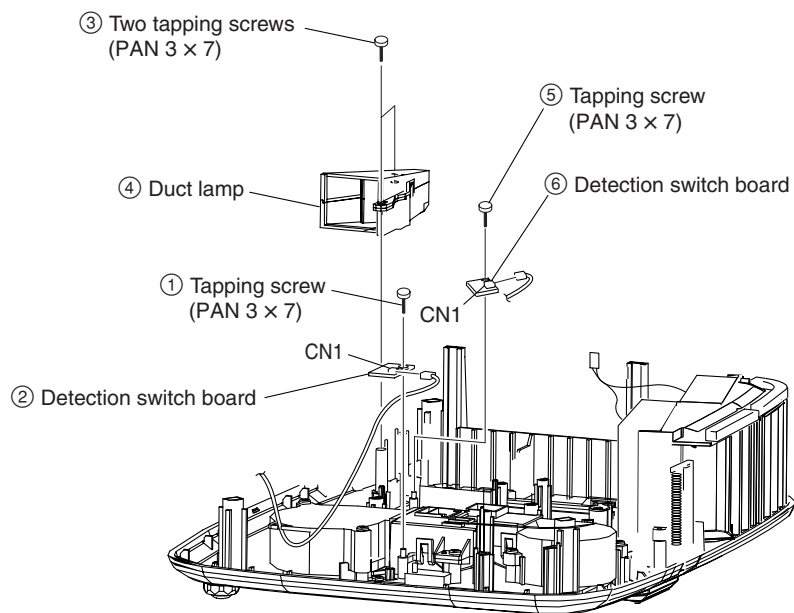


### Assembling Method of Optucs section and Focus/Zoom Adjust Assembly



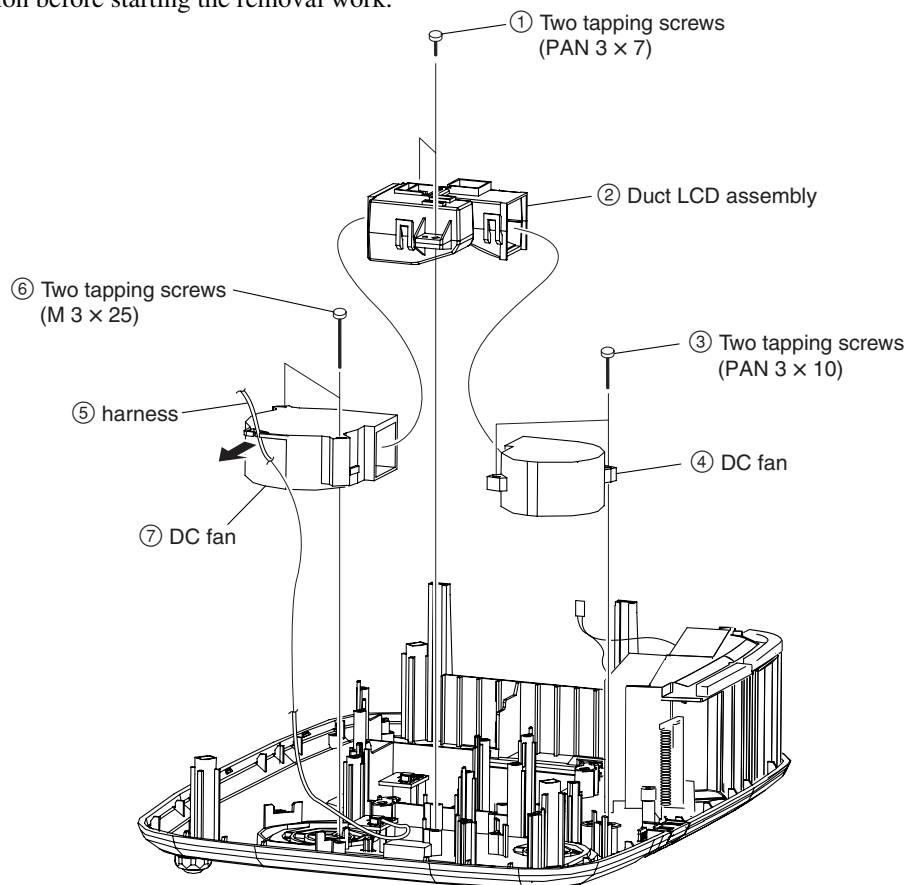
### 1-3-9. Detection Switch Board

Remove the optics section before starting the removal work.



### 1-3-10. DC Fan

Remove the optics section before starting the removal work.



## 1-4. Warning on Power Connection

Use a proper power cord for your local power supply.

	The United States, Canada		Continental Europe		UK, Ireland, Australia, New Zealand	Japan
Plug type	VM0233	290B	YP-12A	COX-07	— <sup>1)</sup>	YP332
Connector type	VM0089	386A	YC-13B	COX-02	VM0310B	YC-13
Cord type	SJT	SJT	H05VV-F	H05VV-F	N13237/CO-228	VCTF
Rated Voltage/Current	10A/125V	10A/125V	10A/250V	10A/250V	10A/250V	7A/125V
Safety approval	UL/CSA	UL/CSA	VDE	VDE	VDE	DENAN
Cord length (max.)	4.5m (14 feet 9 inches)		—			

(1) Use an appropriate rating plug which is applied to local regulations.

Section 2

Electrical Adjustments

2-1. Initial Values of Adjustment Items

Menu Title	ItemName	MemoryName																						
		Set Memory	Picture Memory												S VIDEO									
			VIDEO				INPUT A (Component/VideoGBR)				INPUT A (Computer)				INPUT B (Computer)				Presentation					
		Dynamic	Standard	Natural	Game	Living	Cinema	Present- ation	Dynamic	Standard	Natural	Game	Living	Cinema	Present- ation	Dynamic	Standard	Natural	Game	Living	Cinema	Present- ation		
PICTURE SETTING	Picture Mode																							
	Adjust Picture																							
	Contrast																							
	Bright																							
	Color																							
	Hue																							
	Sharpness																							
	DDE																							
	Gamma Mode																							
	Color Temp																							
Volume																								
INPUT SETTING	Adjust Signal																							
	Dot Phase																							
	H Size																							
	Shift																							
SET SETTING	Wild Mode																							
	Scan Conv																							
	Smart APA																							
	On																							
MENU SETTING	Auto Input Search																							
	Off																							
	Input-A Signal Sel.																							
	Auto																							
SET SETTING	Color System																							
	Auto																							
	Power Saving Mode																							
	Off																							
SET SETTING	Front & Rear																							
	IR Receiver																							
	Panel Key Lock																							
	Off																							
MENU SETTING	Status																							
	Language																							
	English																							
	Menu Position																							
INSTALL SETTING	Start Up Image																							
	0																							
	Image Flip																							
	Off																							
INSTALL SETTING	Background																							
	Blue																							
	Lamp Mode																							
	Standard																							
INFOR- MATION	High Altitude Mode																							
	Off																							
	Security Lock																							
	Off																							
INFOR- MATION	Key																							
	Enter x 4																							
	All information is display only																							

\* The "Picture Mode" items in the "PICTURE SETTING" menu have their respective initial values for each input signal (PRESET MEMORY No.).

Note

There are some adjustment items that cannot be adjusted, depending on the input signal.

Page	Item Name	Set	Color		
			R	G	B
P1-1 CXD9809-page1	TGHST Phase Hi	0			
	TGHST Phase Lo	109			
	SHSH1	38			
	TGHST Position	12			
	DEHPF On	ON			
	DEHPF AAC	ON			
	DEHPF TAP	3			
	DEUSC On	OFF			
	3D GammaSubCont	0			
	3D GammaSubBrt	150			
	DELUT SW	OFF			
	DEUF SW	ON			

P1-2 CXD9809-page2	PC Hi Gain-R	128			
	PC Hi Gain-G	128			
	PC Hi Gain-B	128			
	PC Hi Bias-R	0			
	PC Hi Bias-G	0			
	PC Hi Bias-B	0			
	PC Lo Gain-R	128			
	PC Lo Gain-G	70			
	PC Lo Gain-B	100			
	PC Lo Bias-R	0			
	PC Lo Bias-G	0			
	PC Lo Bias-B	0			

P1-3 CXD9809-page3	Video Hi Gain-R	128			
	Video Hi Gain-G	128			
	Video Hi Gain-B	128			
	PC Mid Bias-R	0			
	Video Hi Bias-G	0			
	Video Hi Bias-B	0			
	Video Lo Gain-R	128			
	Video Lo Gain-G	70			
	Video Lo Gain-B	100			
	Video Lo Bias-R	0			
	Video Lo Bias-G	0			
	Video Lo Bias-B	0			

Page	Item Name	Set	Color		
			R	G	B
P1-4 CXD9809-page4	PC Mid Gain-R	128			
	PC Mid Gain-G	90			
	PC Mid Gain-B	115			
	PC Mid Bias-R	0			
	PC Mid Bias-G	0			
	PC Mid Bias-B	0			
	Video Mid Gain-R	128			
	Video Mid Gain-G	75			
	Video Mid Gain-B	105			
	Video Mid Bias-R	0			
	Video Mid Bias-G	0			
	Video Mid Bias-B	0			

P2 Fan Control	Temperature 1	Display only			
	Temperature 2	Display only			
	Temperature 3	N/A			
	FanSpeed 1	Display only			
	FanSpeed 2	Display only			
	FanSpeed 3	Display only			
	FanSpeed 4	Display only			
	ManualFanSpeed	OFF			
	Burn-In Cycle	0			
	Burn-In Cycle On min	210			
	Burn-In Cycle Off min	30			
	Burn-In Hour	50			
	Burn-In active	OFF			

P3-1 CXA7005-page1	Gain-R	188			
	Gain-G	188			
	Gain-B	188			
	SigCen-R	35			
	SigCen-G	35			
	SigCen-B	35			
	SidA-R	22			
	SidA-G	22			
	SidA-B	22			
	SidB-R	85			
	SidB-G	85			
	SidB-B	85			

Page	Item Name	Set	Color		
			R	G	B
P3-2 CXA7005-page2	Bias-R Normal	122			
	Bias-G Normal	122			
	Bias-B Normal	122			
	Bias-R Flip	122			
	Bias-G Flip	122			
	Bias-B Flip	122			
	Vcom-R Normal	88			
	Vcom-G Normal	88			
	Vcom-B Normal	88			
	Vcom-R Flip	88			
	Vcom-G Flip	88			
	Vcom-B Flip	88			

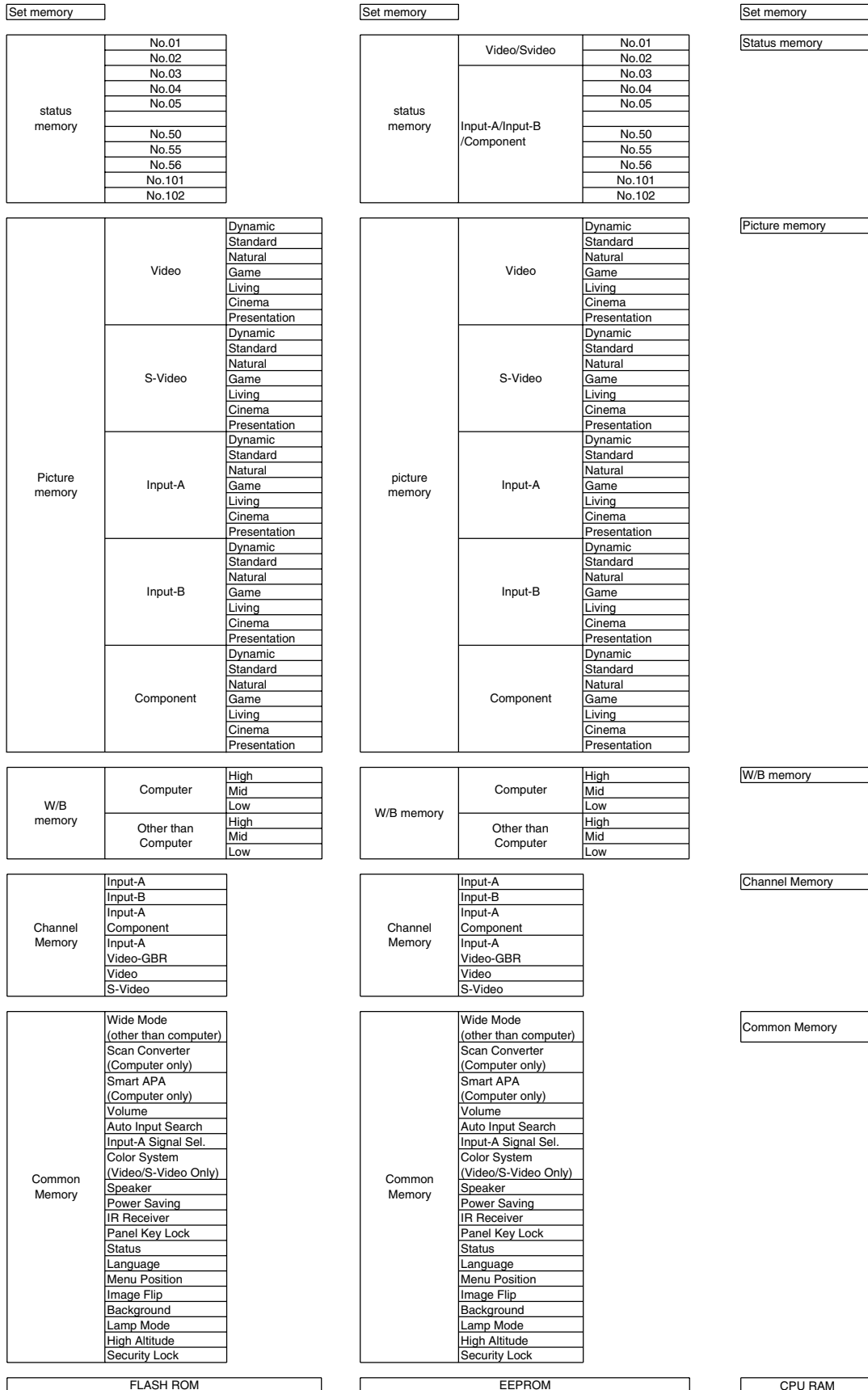
P4 ADC Calibration	RGB Calibrate				
	YUV Calibrate				
	RGB Offset		164	222	164
	RGB Gain		93	105	93
	YUV Offset		164	222	164
	YUV Gain		93	105	93
	R Offset	164			
	G Offset	222			
	B Offset	164			
	R Gain	93			
	G Gain	105			
	B Gain	93			

P5	Power Saving Time	10			
	System Protect	ON			
	Data Reset				
	Hard Reset				
	ROM Version	Display only			
	Lamp Timer	Display only			
	Operation Timer	Display only			
	Prev. Lamp Timer	Display only			
	SOG Threshold	N/A			

P6 Error Count	All value is display only				
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## 2-2. Memory Structure



Memory structure of this model consists of the followings.

- 1 Set memory
- 2 Status memory
- 3 Picture memory
- 4 Chroma memory
- 5 W/B memory
- 6 Channel memory

\* The gamma memory is realized by giving offset to the Contrast and Brightness output values to the devices in the gamma mode function.

Flow of data is described briefly. When the power plug is connected to the wall outlet for the first time (Standby state), all data that are stored in the internal ROM are written in the NVM (non-volatile memory). When the POWER is turned ON, all the status memory data and other memory data that are required for the present picture are selected from each memory block and expanded in the internal RAM.

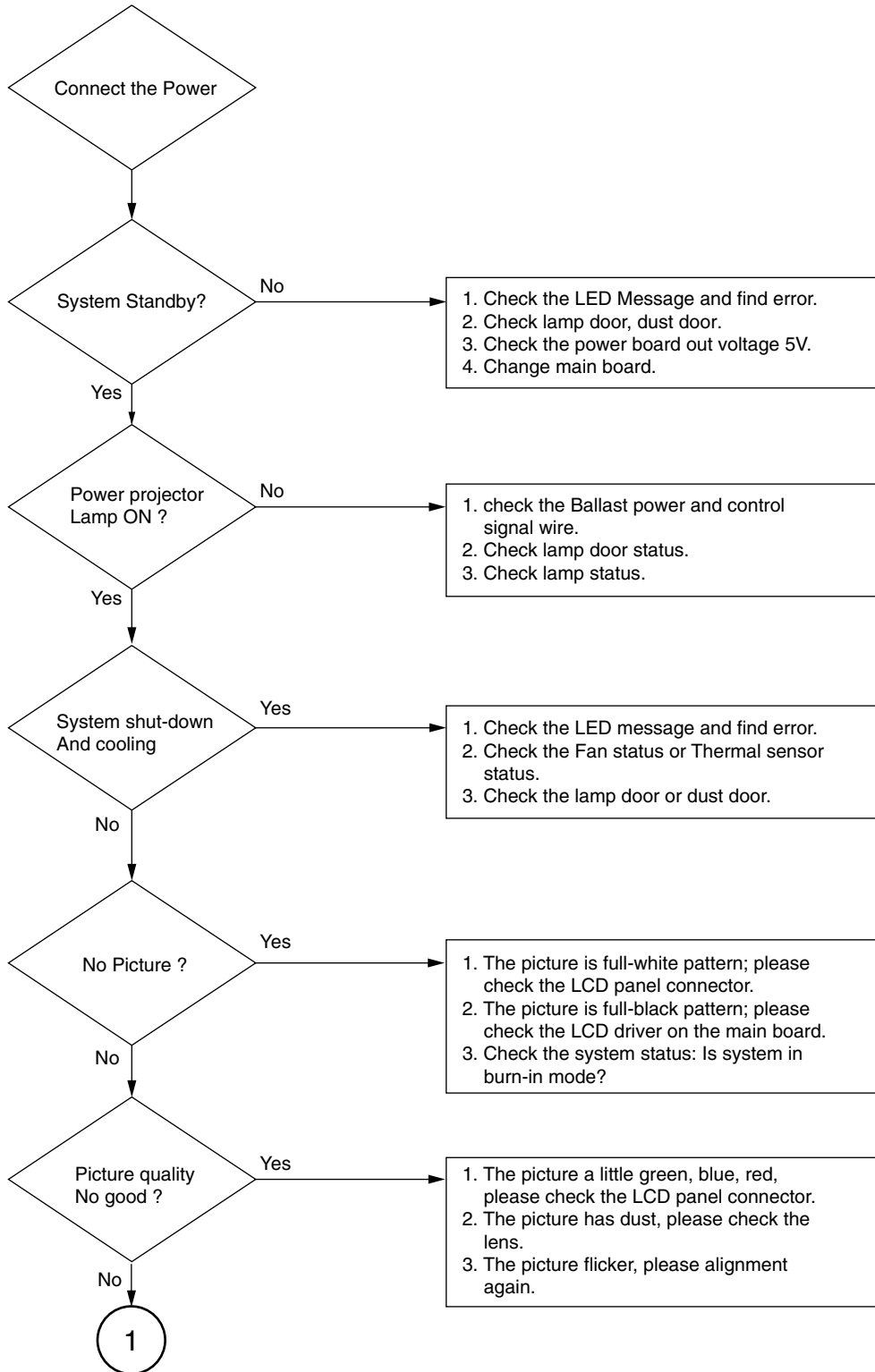
When any adjustment is performed at this moment, the adjustment data (user mode items) are written in the NVM (Service/Special Service) automatically triggered by the memory operation.

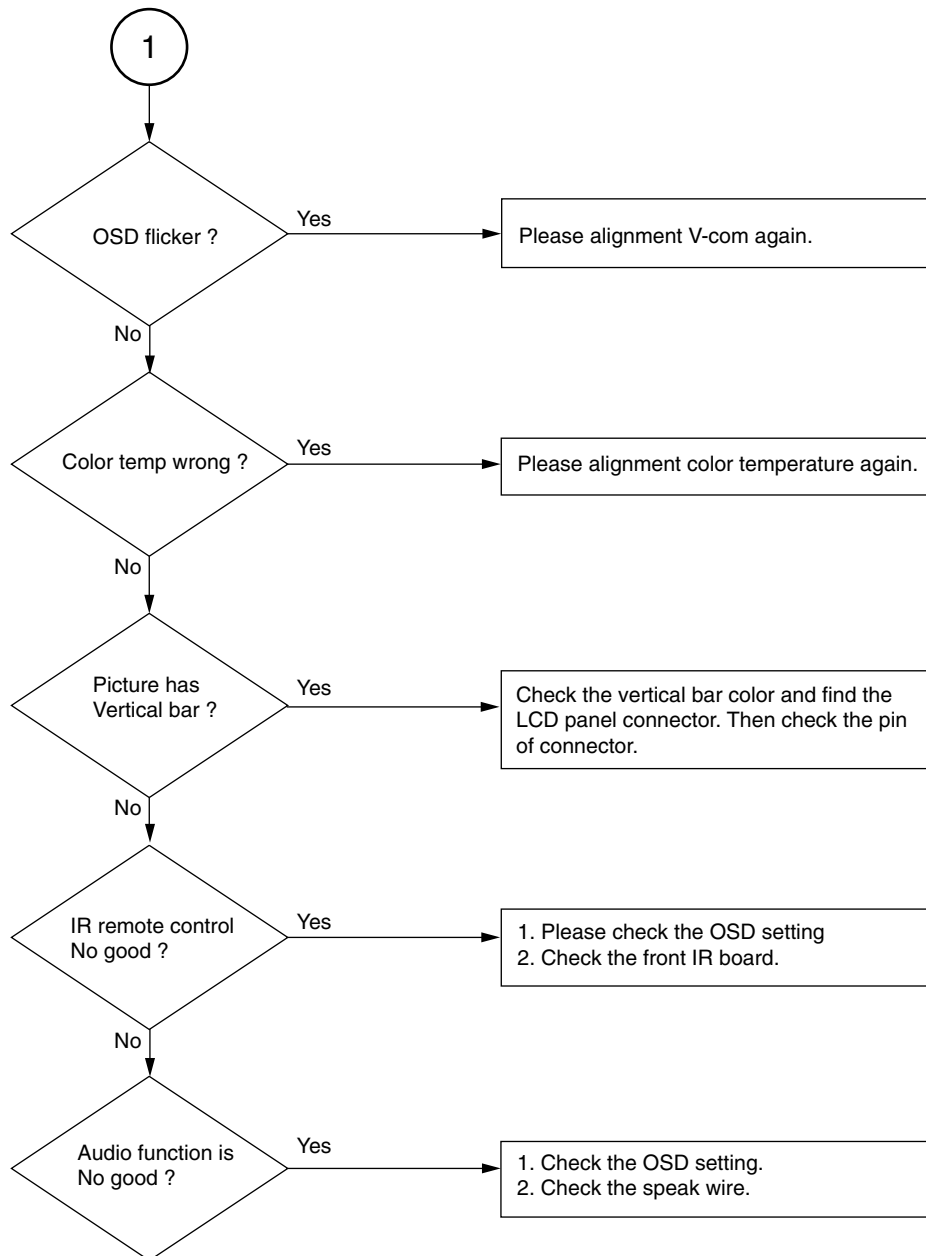
The adjustment items (W/B, Device Adjust) that can be adjusted in the Service Mode or in the Special Service Mode, are memorized in the NVM at the time when the user performs adjustment and performs the memory operation. Note that the factory adjustment data will be lost at this moment.

## Section 3

### Troubleshooting

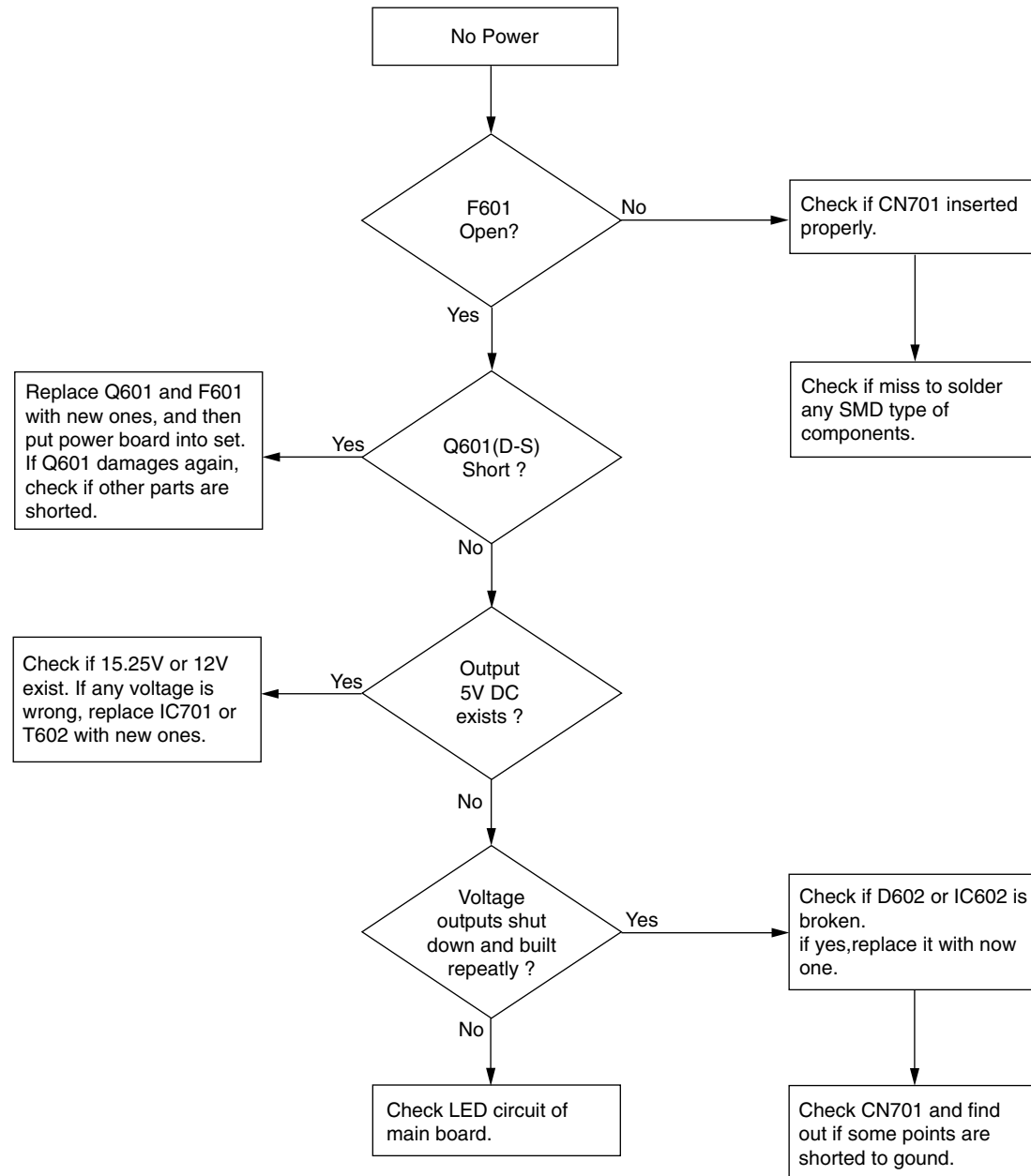
#### 3-1. Electric Troubleshooting



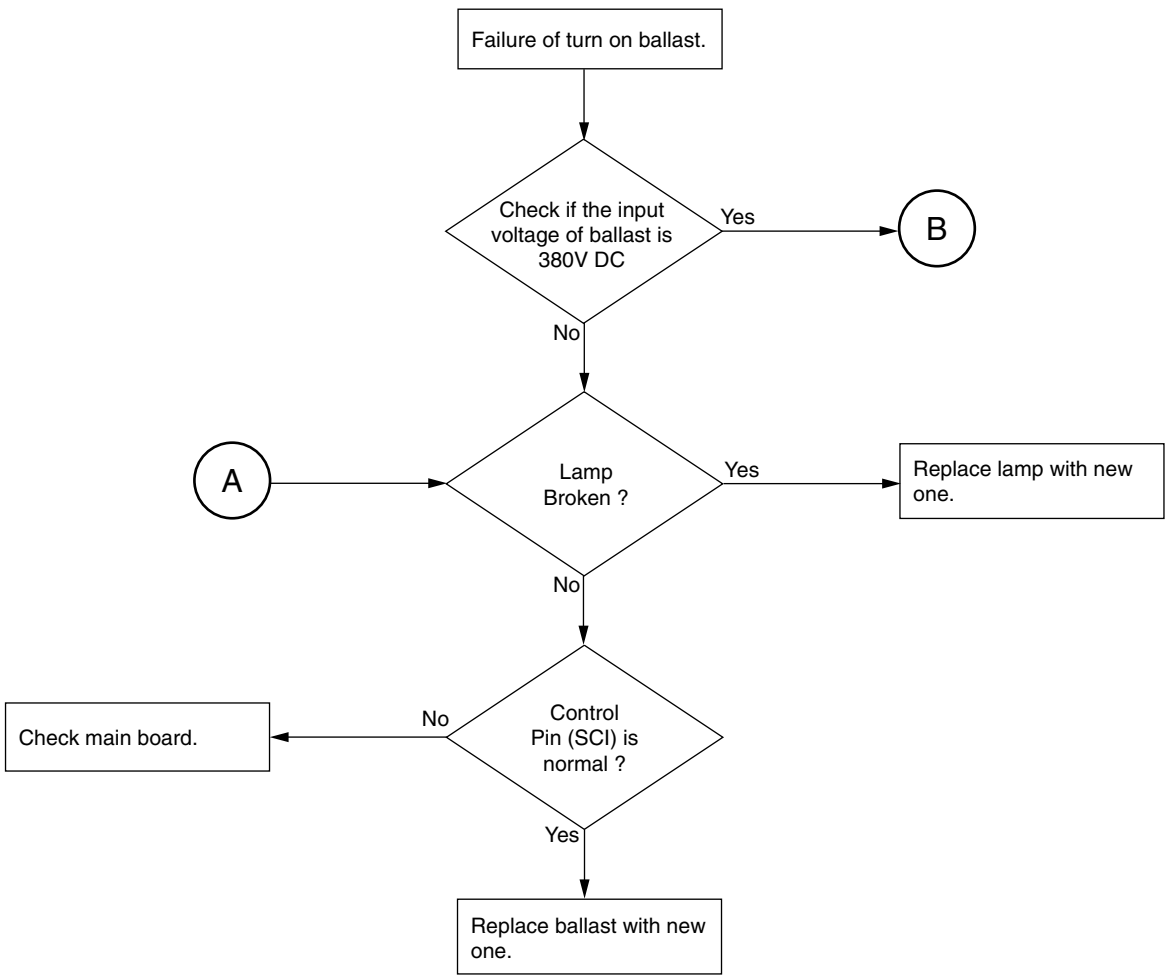


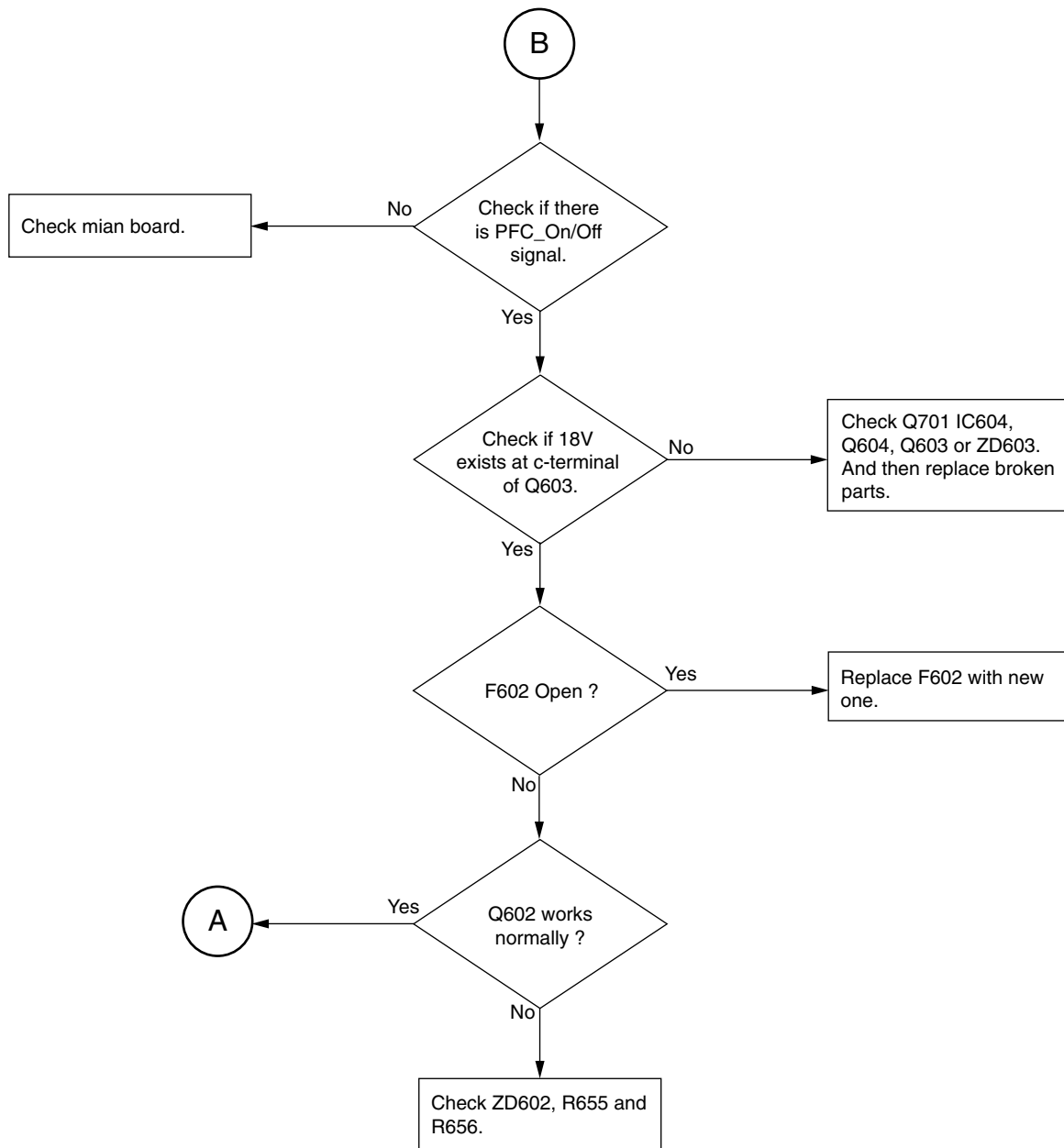
## 3-2. Power Board Troubleshooting

### 3-2-1. No Power



3-2-2. Failure of Turn on Lamp









## Section 4

### Spare Parts

#### 4-1. Notes on Repair Parts

##### 1. Safety Related Components Warning

###### **WARNING**

Components marked  $\triangle$  are critical to safe operation.  
Therefore, specified parts should be used in the case of replacement.

###### **WARNHINWEIS**

Les composants identifiés par la marque  $\triangle$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

##### 2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.  
Parts List has the present standardized repair parts.

##### 3. Stock of Parts

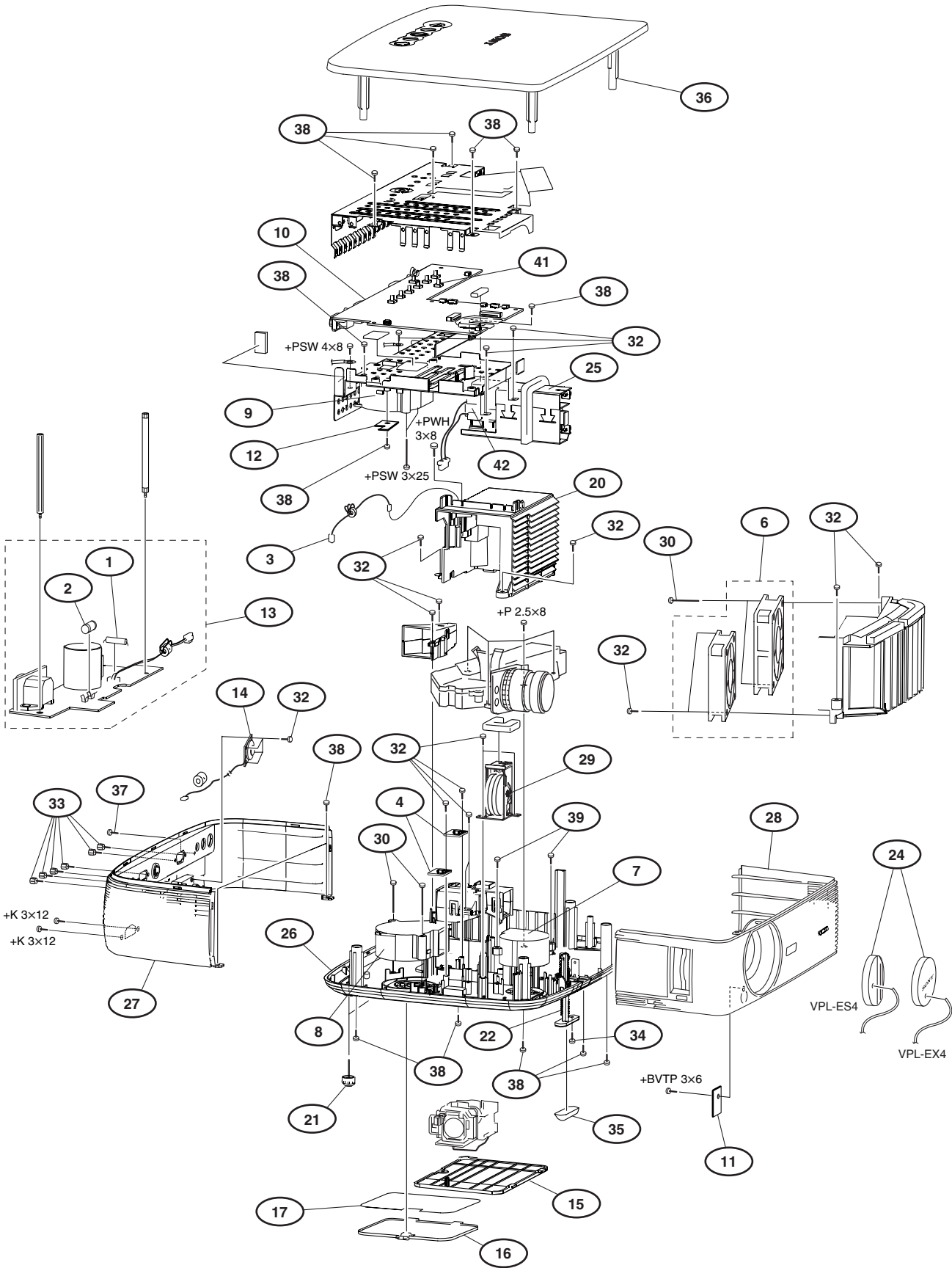
Parts marked with “o” at SP (Supply Code) column of the Spare Parts list may not be stocked. Therefore, the delivery date will be delayed.  
Items with no part number and no description are not stocked because they are seldom required for routine service.

##### 4. Units for Capacitors, Inductors and Resistors

The following units are assumed in Schematic Diagrams, Electrical Parts List and Exploded Views unless otherwise specified.

Capacitors	: $\mu\text{F}$
Inductors	: $\mu\text{H}$
Resistors	: $\Omega$

4-2. Exploded Views



No.	Part No.	SP Description
1	△ 1-576-973-11	s FUSE, CYLINDRICAL (F602)
2	△ 1-576-233-51	s FUSE (H.B.C.) (F601)
3	△ 1-576-974-11	s THERMOSTAT
4	1-789-603-11	s DOOR DETECTION SWITCH BOARD
6	△ 9-885-114-11	s FAN, DC (AXIAL FAN UNIT)
7	△ 9-885-114-12	s FAN, DC
8	△ 1-787-496-11	s FAN, DC (DC)
9	△ 1-787-496-21	s FAN, DC (DC)
10	9-885-114-05	s MOUNTED CIRCUIT BOARD, MAIN (VPL-ES4)
10	9-885-114-07	s MOUNTED CIRCUIT BOARD, MAIN (VPL-EX4)
11	1-789-543-11	s MOUNTED CIRCUIT BOARD, IR SENSOR
12	1-789-544-11	s MOUNTED CIRCUIT BOARD, THERMAL SENSOR
13	9-885-114-04	s MOUNTED CIRCUIT BOARD, POWER
14	9-885-114-06	s SPEAKER
15	9-885-113-91	s LAMP DOOR
16	9-885-113-92	s DOOR, FILTER
17	2-670-067-01	s MESH FILTER
20	2-675-465-01	s ASSY, LAMP BOX
21	9-885-113-93	s ASSY, FOOT ADJUST RUBBER
22	9-885-113-94	s FOOT, ADJUST
24	9-885-113-95	s LENS CAP (VPL-ES4)
24	9-885-114-08	s LENS CAP (VPL-EX4)
25	9-885-114-34	s MYLAR BALLAST
26	9-885-113-96	s LOWER CASE
27	9-885-114-00	s ASSY, SUB REAR CASE (VPL-ES4)
27	9-885-114-33	s ASSY, SUB REAR CASE (VPL-EX4)
28	9-885-113-97	s ASSY, FRONT CASE (VPL-ES4)
28	9-885-114-09	s ASSY, FRONT CASE (VPL-EX4)
29	9-885-113-98	s ASSY, FOCUS/ZOOM ADJUST (VPL-ES4)
29	9-885-114-10	s ASSY, FOCUS/ZOOM ADJUST (VPL-EX4)
30	2-681-547-02	s SCREW, TAP PH W/FL M3*27L
32	2-681-550-01	s SCREW, TAP PAN M3*7L
33	2-681-552-02	s SCREW, EX-HE 4#-40X4+6 STLESS
34	2-681-553-01	s SCREW, TAP PAN M2*6L
35	9-885-114-32	s RUBBER PAD, ADJUST FOOT
36	9-885-113-90	s ASSY, UPPER CASE (WHITE COLOR)
36	9-885-113-99	s ASSY, UPPER CASE (BLOCK COLOR) (VPL-ES4)
37	4-672-839-11	s HEAD, M3 FLAT
38	3-918-696-11	s SCREW (M3X6 LOCK ACE)
39	2-580-621-01	s SCREW, +PWH 3X10
41	9-885-114-02	s SWITCH, TACT
42	△ 1-474-023-11	s POWER SUPPLY BLOCK (BALLAST)
	7-682-903-21	s SCREW, +PWH 3X8
	7-682-954-01	s SCREW, +PSW 3X25
	7-685-645-91	s SCREW +BVTP 3X6
	7-621-262-40	s SCREW, +P 2.5X8
	7-682-250-09	s SCREW, +K 3X12
	7-682-961-01	s SCREW +PSW 4X8

### 4-3. Electrical Parts List

Ref. No.

or Q'ty Part No. SP Description

1pc    △ 1-576-233-51 s FUSE (H.B.C) (F601)

1pc    △ 1-576-973-11 s FUSE, CYLINDRICAL (F602)

### 4-4. Packing Materials & Supplied Accessories

-----  
SUPPLIED ACCESSORIES  
-----

Ref. No.

or Q'ty Part No. SP Description

1pc       1-479-775-12 s REMOTE COMMANDER (RM-PJ4)

1pc       1-832-428-11 s CABLE, VGA

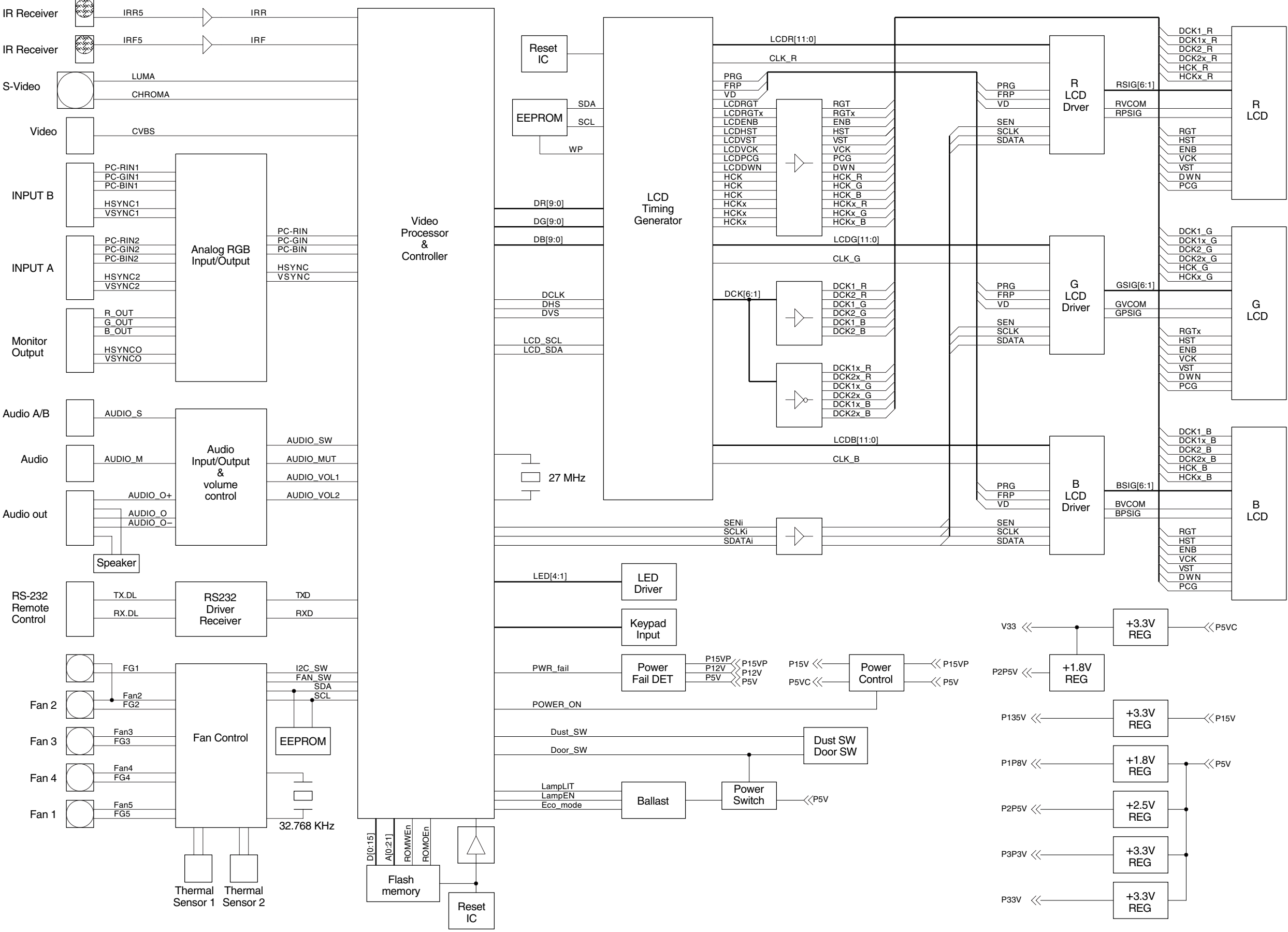
1pc       2-679-319-01 s BAG,CARRY

1pc       3-210-513-02 s CD MANUAL

1pc       3-100-207-01 s GUIDE QS MANUAL  
(JAPANESE, ENGLISH, FRENCH,  
SPANISH, GERMAN, ITALIAN,  
SIMPLIFIED CHINESE)

1pc    △ ----- s CORD SET, POWER  
(See 1-4. Warning on Power Connection)

Section 5  
Block Diagram

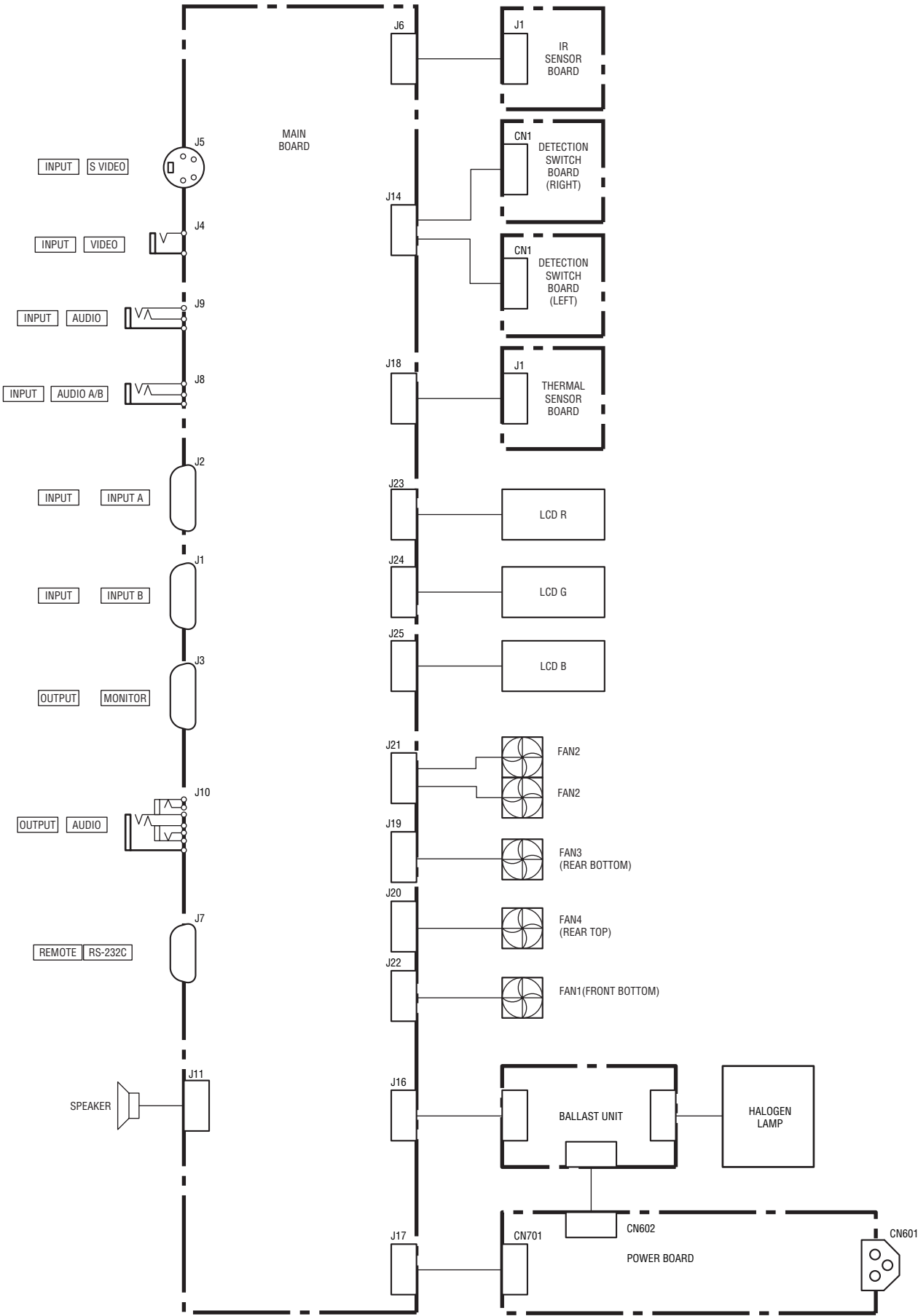


Overall Overall



Section 6  
Diagram

6-1. Frame Schematic Diagram







## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

